CLAIMS

1. A sinusoidal frequency generator comprising:

an oscillating circuit controlled by a control voltage;

wherein the oscillating circuit is a gyrator with two transconductance amplifiers; and

wherein the two transconductance amplifiers each has a bias point fixed by the control voltage in order to regulate the oscillation frequency.

2. The generator according to claim 1, wherein each of the two transconductance amplifiers further comprise:

a differential stage composed of a first transistor and a second transistor each having a source, a drain and a gate, wherein the gate of the first transistor is the input of the first portion of a differential signal, and the gate of the second transistor is the input of the second portion of the differential signal;

a third transistor and a fourth transistor each having a source, a drain and a gate, wherein the gate of the third transistor and the fourth transistor providing an active charge for the first transistor and second transistor; and

a fifth transistor with a source, a drain and a gate, and constituting a power source for the first transistor and the second transistor;

wherein a bias current of the third transistor, the fourth transistor, and the fifth transistor is controlled by the control voltage.

3. The generator according to claim 2, wherein the source of both the first transistor and the second transistor are connected to the drain of the fifth transistor;

wherein the source of the fifth transistor is connected to a first reference voltage;

wherein the drain of the first transistor is connected to the drain of the third transistor and the source of the third transistor is connected to a second reference voltage;

wherein the drain of the second transistor is connected to the drain of the fourth transistor and the source of the fourth transistor is connected to the second reference voltage;

wherein the gate of the third, the fourth and the fifth transistor is controlled by the control voltage.

4. The generator according to claim 3, wherein each of the two transconductance amplifiers further comprise:

a sixth transistor with a source, a drain, and a gate, the source of the sixth transistor connected to the second reference voltage, and the drain of the sixth transistor receiving the control voltage;

a seventh transistor with a source, a drain, and a gate, the source of the seventh transistor connected to the second reference voltage, the gate of the seventh transistor connected to the gate of the sixth transistor, the third transistor and the fourth transistor, and to the control voltage; and

an eighth transistor with a source, a drain and a gate, the source of the eighth transistor connected to the first reference voltage, the drain and the gate of the eighth transistor both connected to the drain of the seventh transistor and to the gate of the fifth transistor.

5. The generator according to claim 1, further comprising:

a first filter composed of a third transconductance amplifier with a bias point fixed by the control voltage.

6. The generator according to claim 5, wherein the third transconductance amplifier further comprises:

a differential stage composed of a first transistor and a second transistor, wherein the first transistor and the second transistor of the differential stage each with a source, a drain, and a gate, and wherein the gate of the first transistor and the gate of the second transistor constituting the input of the differential stage;

a third transistor and a fourth transistor each having a source, a drain and a gate constituting an active charge for the first transistor and second transistor;

a fifth transistor with a source, a drain and a gate, and constituting a power source for the first transistor and the second transistor;

wherein a bias current of the third transistor, the fourth transistor and the fifth transistor is controlled by the control voltage.

7. The generator according to claim 6, wherein the source of the first transistor and the source of the second transistor are connected to the drain of the fifth transistor;

wherein the source of the fifth transistor is connected to a first reference voltage;

wherein the drain of the first transistor is connected to the drain of the third transistor and the source of the third transistor is connected to a second reference voltage;

wherein the drain of the second transistor is connected to the drain of the fourth transistor and the source of the fourth transistor is connected to the second reference voltage;

wherein the gate of the third transistor, the fourth transistor and the fifth transistor are controlled by the control voltage;

wherein the third amplifier further comprises:

a sixth transistor with a source, a drain and a gate electrode, the source of the sixth transistor connected to the second reference voltage, and the drain of the sixth transistor the control voltage;

a seventh transistor with a source, a drain and a gate, the source of the seventh transistor is connected to the second reference voltage, the gate of the seventh transistor is connected to the gate of the sixth transistor, the third transistor and the fourth transistor, and to the control voltage; and

an eighth transistor with a source, a drain and a gate, the source of the eighth transistor is connected to the first reference voltage, and the drain and the gate of the eighth transistor both are connected to the drain of the seventh transistor and to the gate of the fifth transistor.

8. The generator according to claim 5, further comprising:

a second low-pass filter operating above a cut-off frequency of the second low-pass filter, the second low-pass filter comprising an amplifier with a bias point controlled by a voltage controlled by an amplitude control circuit in order to regulate the gain of the amplifier of the second low-pass filter.

9. A converter for converting periodic square signals into sinusoidal signals, including:

an oscillating circuit for generating a sine wave wherein the oscillating circuit is controlled by a control voltage; and

a phase control loop including a phase detector for comparing the sine wave with a reference square signal;

wherein the oscillating circuit includes a gyrator composed of two transconductance amplifiers whose bias points are fixed by the control voltage in order to regulate oscillation frequency.

10. The converter according to claim 9, wherein the phase control loop comprises MOS-type transistors assembled as a buffer for generating a periodic square signal from analog outputs.

11. A semiconductor product comprising:

a frequency reception turner including an oscillating circuit for generating a sine wave wherein the oscillating circuit is controlled by a control voltage; and

a phase control loop including a phase detector for comparing the sine wave with a reference square signal;

wherein the oscillating circuit includes a gyrator composed of two transconductance amplifiers whose bias points are fixed by the control voltage in order to regulate oscillation frequency.

12. The converter according to claim 11, wherein the phase control loop comprises MOS-type transistors assembled as a buffer for generating a periodic square signal from analog outputs.